07

APPLICATION OF LANDSAT SYSTEM FOR IMPROVING METHODOLOGY FOR INVENTORY AND CLASSIFICATION OF WETLANDS

Dr. David S. Gilmer
U. S. Fish & Wildlife Service
Northern Prairie Wildlife Research Center
Jamestown, North Dakota 58401

5 April 1976

Type II Progress Report for Period 1 January to 31 March 1976

Prepared for:
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Publication authorized by the Director, U. S. Fish and Wildlife Service

23000

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.

4. Title and Subtitle	5. Report Date
Application of LANDSAT system for improving methodology for inventory and classification of wetlands.	5 April 1976
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
David S. Gilmer (IN 300) and Edgar A. Work, Jr.	
9. Performing Organization Name and Address	10. Work Unit No.
U. S. Fish and Wildlife Service Northern Prairie Wildlife Research Center Jamestown, North Dakota 58401	
	11. Contract or Grant No. S-54049A
	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address	Type II Progress Rept. 1 January-31 March 1976
Mr. Harold Oseroff, Code 902 Goddard Space Flight Center Greenbelt, Maryland 20771	
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

A review of MSS screening imagery collected by NASA aircraft revealed navigational errors in siting certain transects for both the May and July 1975 flights. These errors will reduce the usefulness of portions of the aircraft MSS data. Most aerial photography has been received from the EROS Data Center. Aircraft MSS data have been placed on order. LANDSAT CCT's orders will be placed during the next reporting period. Preparation of computer programs for generating pond and lake statistics from both aircraft and satellite data is nearly completed.

17. Key Words	18. Distribution Statement

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Not applicable	6	

Type II Progress Report
LANDSAT-2

(Cover Sheet)

(Technical Report Standard Title Page)

Title: Application of LANDSAT system for improving methodology for inventory and classification of wetlands.

LANDSAT Proposal No.: 23000

GSFC ID No. of P.I.: 300

A. Problems

An extensive review of MSS screening imagery collected by NASA supporting aircraft revealed that navigational errors had occurred in the siting of certain flight lines. The nominal locations of all flight lines had been selected to coincide with existing Fish and Wildlife Service (FWS) sampling transects and to satisfy the requirements of an experimental statistical design. Of great importance to this design was a requirement that the two sets of aircraft observations (May and July 1975) should geographically coincide. The flight line siting errors will negate the usefulness of a portion of the aircraft data and will necessitate a revision of the experimental design which may affect the accuracy of second stage estimates of pond and lake numbers. A tabulation of aircraft data coverage is included under section H of this report.

B. Accomplishments

The bulk of the aircraft photographic data was ordered and received from the EROS Data Center during this reporting period.

Aircraft MSS data needs have been determined and the appropriate data ordered from NASA/JSC. Delivery of these data is expected during the next reporting period.

All standing-order LANDSAT imagery for the period April through October 1975 has been received. This imagery will be reviewed and an order for LANDSAT CCT's will be placed sometime in the near future.

A major effort undertaken during this reporting period has been the modification and rewriting of computer programs which will be utilized for generating pond and lake statistics. Similar programs will be applied to both aircraft and satellite data. This task which is nearly complete was undertaken to increase operating efficiency and economy. We now expect the processing scenario for the generation of pond and lake statistics to occur as indicated in Figure 1.

C. Significant Results

None

D. Publications

None

E. Recommendations

None

F. Funds Expended

Basic cost of this investigation exclusive of data purchase allowances is $130,233.

Total Expenditures Allowed	Expenditures during this reporting period	Cumulative Expenditures
$130,233	$18,400	$18,400

G. Data Use

	Value of data allowed*	Value of data ordered	Value of data received
Imagery (#G23000)	$6800.00	$5372.00	$5372.00
CCT (#GB30000)	$3600.00	0.0	0.0
Aircraft (#GW30000)	$7920.00	$5967.00	$5967.00

*NASA/GSFC funded accounts at EROS Data Center, Sioux Falls, SD

H. Aircraft Data

A summary of supporting aircraft flight line siting relative to the requested transect positions is shown in Table 1. These data are based upon an examination of visicorder screening imagery. Some difficulty was experienced during the course of this examination because of poor definition (contrast) and the mirror image reversal in the screening imagery and because scanner flight logs were not provided. Tables 2 and 3 list the sequences of aircraft MSS data which have been requested from NASA/JSC.

TABLE 1

SUMMARY OF SUPPORTING AIRCRAFT FLIGHT LINE SITING

Transect Number	Flight Line Occurrence Relative to True Transect Location (May 1975)		Flight Line Occurrence Relative to True Transect Location (July 1975)	
	Cross Track Displacement*	Along Track Deletions	Cross Track Displacement*	Along Track Deletions
2			0.5 Mile North	
3			1.6 Mile South	
4			0.3 Mile South	
5	0.3 Mile South		0.2 Mile South	
6				0.12 Mile West End
7				
8				
9				
10	0.3 Mile North	0.5 Mile East End	0.3 Mile North	
11	0.2 Mile South		0.4 Mile North	
12				3.0 Mile East End
13				
15	0.3 Mile South		0.2 Mile North	
16				
17	0.2 Mile North		0.2 Mile North	
18	0.3 Mile South		0.3 Mile South	
19	0.3 Mile South		0.3 Mile South	
20	0.4 Mile North			
21				
22				

*No notation is made for flight lines occurring within 0.2 mile (north or south) of true transect position over entire length of transect.

Transect positions were identical for the May and July observations. There were no transects numbered 2 and 14.

TABLE 2

REQUESTED SINGLE WAVEBAND SUPPORTING AIRCRAFT MSS DATA

CCT's in Universal format and 5-inch imagery for M^2S channel 10 only were requested from NASA/JSC for the following data sequences for Missions 305 and 316:

LINE NO.	TAPE NO.	DAY	START TIME	STOP TIME
2	5G-00024	135	14:40:20	14:42:04
3	"	"	14:27:15	14:29:02
4	"	"	15:05:00	15:06:42
5	"	"	15:32:58	15:34:45
6	"	"	15:30:00	15:31:50
7	"	"	15:25:33	15:27:35
8	"	"	15:52:08	15:56:54
9	"	"	15:41:46	15:43:30
10	"	"	16:03:33	16:05:25
11	"	"	16:16:35	16:18:20
12	"	"	16:25:45	16:27:44
13	"	"	16:33:20	16:35:10
15	"	"	16:43:43	16:45:25
16	"	"	16:39:12	16:41:00
17	"	"	17:05:09	17:06:56
22	"	"	14:44:46	14:46:29
2	5G-00052	199	16:56:25	16:58:10
3	"	"	16:44:05	16:45:55
4	"	"	17:21:38	17:23:22
5	"	"	17:49:15	17:51:00
6	"	"	17:46:24	17:48:10
7	"	"	17:41:48	17:43:50
8	5G-00053	200	16:50:14	16:54:52
9	"	"	16:40:42	16:42:28
10	"	"	17:01:54	17:03:46
11	"	"	17:11:25	17:13:10
12	"	"	17:36:47	17:38:05
13	"	"	17:31:00	17:32:50
15	"	"	18:04:03	18:05:50
16	"	"	18:08:33	18:10:20
17	"	"	17:55:50	17:57:36
22	"	"	18:31:16	18:33:00

TABLE 3

REQUESTED MULTIPLE WAVEBAND SUPPORTING AIRCTAFT MSS DATA

CCT's in Universal format for all M^2S channels and 5-inch imagery for M^2S channels 1, 2, 4, 6, 9, 10, and 11 were requested from NASA/JSC for the following data sequences for Missions 305 and 316:

LINE NO.	TAPE NO.	DAY	START TIME	STOP TIME
17	5G-00024	135	17:05:09	17:08:24
18	"	"	16:59:11	17:02:16
19	"	"	15:11:50	15:17:14
20	"	"	15:00:42	15:02:13
21	"	"	14:56:08	14:58:05
22	"	"	14:44:46	14:49:29
17	5G-00053	200	17:54:20	17:57:36
18	"	"	17:44:45	17:47:54
19	5G-00052	199	17:28:20	17:33:42
20	"	"	17:16:56	17:18:50
21	"	"	17:11:51	17:13:48
22	5G-00053	200	18:28:18	18:33:00

A direct copy of the M^2S high-density-digital-tape (HDDT) as recorded in the aircraft (all channels) was requested for the following data tape:

TAPE NO.	DAY
5G-00052	199 (Mission 316)

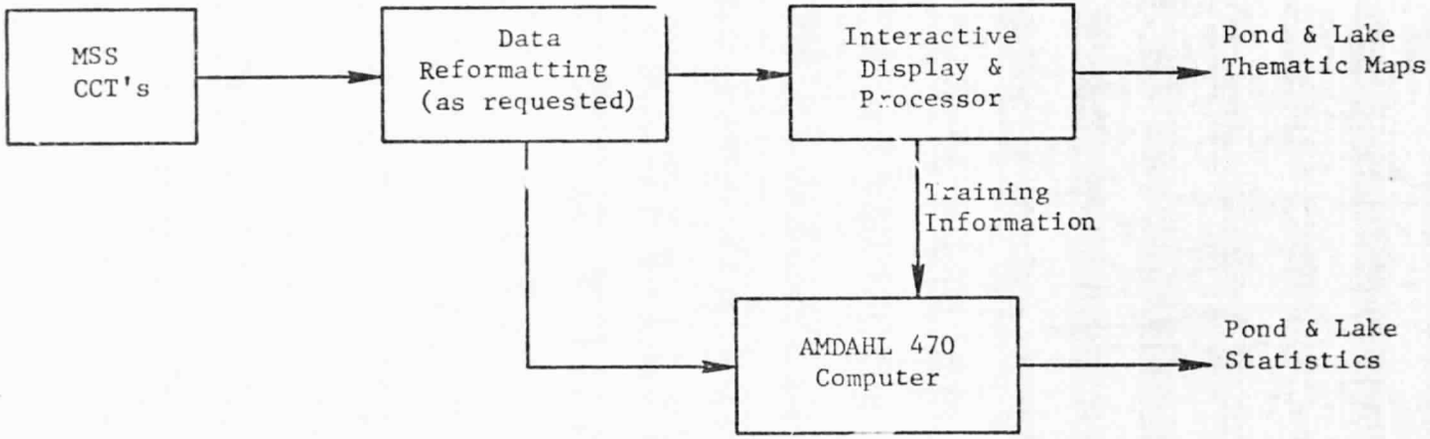

Figure 1. Scenario of data processing for the survey of pond and lake habitat features.